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Please find below and/or attached an Office communication concerning this application or proceeding.

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docket_ip@pillsburylaw.com

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 7, 8, 10, 18-44 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

3. Claim 7 recites “a residual error threshold”..... “set at a predetermined level”.... “compared to the horizontal error ellipse parameter”. Applicant’s original disclosure does not have possession of the limitation. As noted, applicant’s specification page 19 recites, “residual error for the polynomial fit” and also “a predetermined threshold”. These are two different limitations. Applicant has no possession of the claimed, “a residual error threshold” moreover that it is “set at a predetermined level” and further that it is “compared to the horizontal error ellipse parameter”.

Claim 8 is rejected for depending on claim 7.

This is new matter,

Claims 10, 18, 25 call for “retrieving an initial height of the receiver based on the identified reference location”, “identifying a plurality of grid points *located a predetermined distance from the reference location*”, “determining an *average height of the receiver based on*

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elevation information associated with the plurality of grid point". The limitations have not support in the original disclosure, emphasis added.

Claims 10, 18, 25 further call for "determining an average error value based on the elevation information associated with the plurality of grid points and the average height of the receiver".

As noted the original disclosure has no support for the limitations. Applicant's disclosure section 024 calls for "a fixed height h", "fixed value of h", and an "average value of h". The said section further calls for "*Error in the fixed h*", NOT -- average error value-- as claimed. Thus there is no support for the claimed "determining an average error value based on the elevation information associated with the plurality of grid points and the average height of the receiver".

This is new matter,

The rest of the claims are rejected for depending on a rejected base claim

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 7, 8, 10-31, 34-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 19 and 26, the applicant recites, "a maximum height of a satellite position receiver", "a minimum height of a satellite position receiver". It is not clear what all is meant and encompassed by "maximum" and "minimum". The terms are relative terms and do not particularly and distinctly set forth the meets and bounds of "maximum" and "minimum". Is the maximum or minimum 3m or 4m or 100m? How does one determine if the maximum or

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minimum has been reached or has not been reached? Thus the metes and bounds are not set forth.

Independent Claims 10, 18, 25, 34 call for “an initial height”, “average height”, “average height error”. It not clear what height applicant is referring to. Is it the height of a satellite from the earth, the height of a mountain?

Claim 25 recites “a means plus function” limitation. Applicant does not identify the claimed means.

Dependent claims 12-31, 34-44 are rejected for depending on a rejected base claim and for also having the same deficiency as the rejected base claim.

The rest of the claims are rejected for depending on a rejected base claim

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-9, 34-44 rejected under 35 U.S.C. 103(a) as being unpatentable over P.

Ptasinski et al (Jounal of Navigation, 2002, chapter 55, pages 451-462) in view of Hancock (6202023).

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Regarding claim 2, Ptasinski et al disclose the satellite positioning receiver (see GPS antenna, fig. 4) capable of receipt of at least three positioning signals (pages 453, 454) comprising:

- a navigation processor (figs. 3&4) that processes the at least three positioning signals and determines an at least three code phases (pages 453-456); and

- a location determined from initial digital terrain elevation data (pages 453-456) used to calculate a solution with the at least three code phases and an altitude equation derived from the initial digital terrain elevation data, where the solution further includes:

- a horizontal error ellipse parameter (fig. 1, pages 452, 453) in the altitude equation that form an error ellipse having a major axis and a minor axis that correspond to the altitude error (figs. 1&2);

- a plurality of points along the major axis and the minor axis that form points on a digital map having longitudes and latitudes (figs. 1&2; pages 452, 453); and

- a memory that contains digital terrain elevation data (altitude augmentation using digital maps, pages 454-456) the grid points.

Ptasinski disclose the points along the major axis and the minor axis (fig. 1) as a polynomial fit over a surface (figs. 1, 2, 5-10; pages 452, 453, 458- 462) of points on a digital map. Ptasisnksi is not quite clear about a grid of grid of points, although a digital map with points along longitudes and latitudes are disclosed on pages 452, 453. However, to clearly illustrate the limitation, Hancock teaches of a two dimensional polynomial surface fit over a grid of points (Figs. 1, 2; cols. 6, etc).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ptasinski as taught by Hancock (col. 4, lines 1+) for the purpose of allowing faster database searches of position.

Regarding claim 3, Ptasinski et al disclose the satellite positioning receiver of claim 2, further including:

a server that receives a plurality of satellite code phases where each of the satellite code phases is associated with a satellite positioning system signal over a wireless network (ericson mobile, fig. 4); and

a controller in the server accesses the initial digital terrain data in order to determine a solution (pages 455, 456)

Regarding claim 4, Ptasinski et al disclose the satellite positioning receiver of claim 2, where the initial digital terrain elevation data is retrieved from the memory in response to receipt of a signal other than the at least three positioning signals.

Regarding claim 5, Ptasinski et al disclose the satellite positioning receiver of claim 2, wherein the digital terrain elevation data in the memory is NIMA (DTED) level 0 digital mean elevation data.

Regarding claim 6, Ptasinski et al disclose the satellite positioning receiver of claim 2, where the digital terrain elevation data in the memory is GTOPO30 Global Elevation data.

Regarding claim 7 (as best understood), Ptasinski et al in view of Hancock disclose the satellite positioning receiver of claim 2, further including:

a maximum residual error in the polynomial surface fit over the grid points utilized to determine whether the error is below a predetermined threshold, where the maximum residual

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error is the largest residual error . Ptasinski disclose a residual error when a polynomial (ellipsoid) is fit over a given surface of the earth within ($\pm 100\text{m}$).

Ptasinski did not disclose "grid points" as claimed. However, Ptasinski disclose a maximum residual error below a predetermined threshold when a polynomial such as an ellipsoid is placed to fit over points on the surface of the earth. That is Ptasinski (pages 452 and 453, figs. 1 and 2) disclose a maximum deviation of a point on the surface of the earth from the ellipsoid (polynomial) to be least accurate. In other determinations, the error was 0.4 m in one situation and 0.00002m in another situation. These errors were determined to be reasonably accurate. Hancock teaches of a polynomial surface fit over a grid of points (Figs. 1, 2; cols. 6, etc).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ptasinski as taught by Hancock for the purpose of allowing faster database searches of positions (col. 4, lines 1+) within a grid.

Regarding claim 8, Ptasinski et al disclose the satellite positioning receiver of claim 7, wherein, the predetermined threshold is 100 meters (page 452).

Regarding claim 9, Ptasinski et al disclose the receiver of claim 2, wherein the navigation processor is a processor located in a server.

Regarding claim 34, Ptasinski et al disclose a server (fig. 4), comprising:

a transceiver (figs. 3&4) that receives a plurality of satellite code phases (pages 454-457);

a memory (figs. 3&4) with digital terrain elevation data (pages 454-457); and

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a controller (figs. 3&4) that processes the plurality of code phases and accesses the digital terrain data in memory with an initial height to determine a location indicated by the plurality of satellite codes and the digital terrain data (pages 454-457);

a message containing the location data sent from the transceiver;

a horizontal error ellipse parameter (figs. 1&2) in an altitude equation that form an error ellipse having a major axis and a minor axis that corresponds to an altitude error about the initial height (pages 452-456); and

a plurality of points along the major axis and the minor axis that form a grid of grid points that the controller accesses the digital terrain elevation data in memory at the grid points (pages 452-457).

Ptasinski disclose the points along the major axis and the minor axis, but was no quite clear about a polynomial surface fit over the points. However, Hancock teaches of a two dimensional polynomial surface fit over a grid of points (Figs. 1, 2; cols. 6, etc).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ptasinski for the purpose of allowing faster database searches of position (col. 4, lines 1+).

Regarding claim 35, 37, 39, 41, 43, Ptasinski / Hancock et al disclose the satellite position receiver, wherein the solution further includes an initial height taken from a height value in the neighborhood of a pseudolite (see figs. 1 and 2; pages 452-453). In situations where at least three satellites are not available, a 3-D position cannot be calculated. Thus for calculation of a 3-D position, two position signals from two satellites are obtained and a third signal for height is obtained from another sensor such as a pseudollite (also known as a pseudo satellite;

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see Ptasinski pages 452-453). This is known as adding an altitude-aiding equation to obtain a 3-D position solution. Fig. 4 shows a base station (pseudolite) providing position correction data to a GPS receiver. The base station is located at a geodetic site. That is the 3-D position (including height) of the base station are known and used as a standard in the cell or area covered by the base station. The correction information includes altitude information for position augmentation in the GPS receivers in the area covered by the base station.

Regarding claim 36, 38, 40, 42, 44, Ptasinski / Hancock et al disclose the satellite position receiver, wherein the pseudolite is able to communicate with a wireless device (pages 452-457; fig. 4). Fig. 4 shows a base station (pseudolite) providing position correction data to a GPS receiver. The base station is located at a geodetic site. That is the 3-D position (including height) of the base station are known and used as a standard in the cell or area covered by the base station. The correction information includes altitude information for position augmentation in the GPS receivers in the area covered by the base station.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 10, 12-31 are rejected under 35 U.S.C. 102(b) as being anticipated by P. Ptasinski et al (Journal of Navigation, 2002, chapter 55, pages 451-462).

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Regarding claim 10-31, 34 are, Ptasinski et al disclose a method of determining the location of a receiver (figs. 3&4) in recipient of at least three positioning signals, comprising:

identifying a reference location (pages 452-456) with the at least three positioning signals;

retrieving an initial height (pages 452, 453);

determining an average height along with an average height error (altitude error, pages 452, etc) from the initial height (pages 452-454);

deriving at least three simultaneous equations associated with the at least three positioning signals (pages 452-456);

solving the at least three simultaneous equations (pages 452-456) with the average height and the average height error that results in a position and a corresponding horizontal error ellipse (figs. 1, 2);

fitting a two-dimensional polynomial to the corresponding horizontal error ellipse (figs. 1&2); and

solving the at least three simultaneous equations and the two dimensional polynomial that results in an altitude of the satellite positioning receiver (pages 453-456).

Regarding claim 12, Ptasinski et al disclose the method of claim 10, where retrieving an initial height further includes:

transmitting a plurality of code phases to a server where each of the code phases is associated with each of the positioning signals; and

accessing digital terrain data stored in a memory to retrieve the initial height.

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Regarding claim 13, Ptasinski et al disclose the method of claim 12, wherein the wireless network is a cellular communication network.

Regarding claim 14, Ptasinski et al disclose the method of claim 10, where retrieving an initial height further includes: receiving the initial height from a memory located within the satellite positioning receiver.

Regarding claim 15, Ptasinski et al disclose the method of claim 10, further include: acquiring another height using variables from the two dimensional polynomial; and comparing the difference between the other height and altitude to a predetermined threshold.

Regarding claim 16, Ptasinski et al disclose the method of claim 15, where the predetermined threshold is 100 meters.

Regarding claim 17, Ptasinski et al disclose the method of claim 10, where the receiver is located in a server.

Regarding claim 18, Ptasinski et al disclose the satellite positioning receiver apparatus (figs. 3&4) in recipient of at least three positioning signals, comprising:

means for identifying a reference location with the at least three positioning signals (pages 452-456);

means for retrieving an initial height (pages 452-456);

means for determining an average height along with an average height error from the initial height; means for deriving at least three simultaneous equations associated with the at least three positioning signals(pages 452-456);

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means for solving the at least three simultaneous equations with the average height and the average height error that results in a position and a corresponding horizontal error ellipse(pages 452-456);

means for fitting a two-dimensional polynomial to the corresponding horizontal error ellipse; and

means for solving the at least three simultaneous equations and the two dimensional polynomial that results in an altitude of the satellite positioning receiver(pages 452-456).

Regarding claim 19, Ptasinski et al disclose the apparatus of claim 18, wherein the determining an average height means further includes: means for identifying one of a minimum height and a maximum height; and means for setting the height error equal to the absolute value of the difference between the one of the minimum height and the maximum height and the average height.

Regarding claim 20, Ptasinski et al disclose the apparatus of claim 18, wherein the means for retrieving an initial height further includes: means for receiving the initial height from a server located in a wireless network.

Regarding claim 21, Ptasinski et al disclose the apparatus of claim 20, wherein the wireless network is a cellular communication network.

Regarding claim 22, Ptasinski et al disclose the apparatus of claim 18, wherein the means for retrieving an initial height further includes: means for receiving the initial height from a memory located within the satellite positioning receiver.

Regarding claim 23, Ptasinski et al disclose the apparatus of claim 18, further including:

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means for acquiring another height using variables from the two dimensional polynomial; and means for comparing the difference between the other height and altitude to a predetermined threshold.

Regarding claim 24, Ptasinski et al disclose the apparatus of claim 23, where the predetermined threshold is 100 meters.

Regarding claim 25, Ptasinski et al disclose a machine-readable signal bearing medium (figs. 3&4) for satellite positioning receiver apparatus containing a plurality of machine-readable signals, comprising:

means (figs. 3&4) for identifying a reference location upon receipt of at least three positioning signals (pages 452-456);

means (figs. 3&4) for retrieving an initial height (altitude, pages 452-456);

means (fig. 2) for determining an average height along with an average height error from the initial height (pages 452-456);

means (figs. 3&4) for deriving at least three simultaneous equations associated with the at least three positioning signals (pages 452-456);

means (figs. 3&4) for solving the at least three simultaneous equations with the average height and the average height error that results in a position and a corresponding horizontal error ellipse (pages 452-456);

means (figs. 3&4) for fitting a two-dimensional polynomial to the corresponding horizontal error ellipse (pages 452-456); and

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means (figs. 3&4) for solving the at least three simultaneous equations and the two dimensional polynomial that results in an altitude of the satellite positioning receiver (pages 452-456).

Regarding claim 26, Ptasinski et al disclose the machine-readable signal bearing medium of claim 25, wherein the determining an average height means further includes:

means for identifying one of a minimum height and a maximum height (pages 452-456);
and

means for setting the height error equal to the absolute value of the difference between the one of the minimum height and the maximum height and the average height (pages 452-456).

Regarding claim 27, Ptasinski et al disclose the machine-readable signal bearing medium of claim 25, wherein the means for retrieving an initial height further includes: means for receiving the initial height from a server located in a wireless network.

Regarding claim 28, Ptasinski et al disclose the machine-readable signal bearing medium of claim 27, wherein the wireless network is a cellular communication network.

Regarding claim 29, Ptasinski et al disclose the machine-readable signal bearing medium of claim 25, wherein the means for retrieving an initial height further includes:

means for receiving the initial height from a memory.

Regarding claim 30, Ptasinski et al disclose the machine-readable signal bearing medium of claim 25, further including:

means for acquiring another height using variables from the two dimensional polynomial;
and

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means for comparing the difference between the other height and altitude to a predetermined threshold.

Regarding claim 31, Ptasinski et al disclose the machine-readable signal bearing medium of claim 30, where the predetermined threshold is 100 meters.

Response to Arguments

10. Applicant's arguments filed 8/5/09 have been fully considered but they are all not persuasive.

Applicant argues that the term, "maximum" has being deleted or amended from the claims. The examiner respectfully disagrees and notes that claim 19, 26 still contain the rejected limitation. It is further noted that the specification sections 027, 089 disclose the terms "maximum" and "minimum", but how does one determine if the maximum, minimum error has been reached or has not been reached? The claims and specification do not provide a standard or suggestion on how to determine "maximum residual error" as claimed. Moreover, applicant copies the term from the specification and pastes it in the claims. The terms, "maximum" and "minimum" are relative terms and do not particularly and distinctly set forth the meets and bounds of "a maximum error" or "minimum error" as claimed. Is "maximum", "minimum" 3m or 4m or 100m? The bounds are not set forth.

As further noted, Claims 10, 18, 25 call for "retrieving an initial height of the receiver based on the identified reference location", "identifying a plurality of grid points *located a predetermined distance from the reference location*", "determining an *average height of the*

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receiver based on elevation information associated with the plurality of grid point". The limitations have not support in the original disclosure, emphasis added.

Claims 10, 18, 25 further call for "determining an average error value based on the elevation information associated with the plurality of grid points and the average height of the receiver".

As noted the original disclosure has no support for the limitations. Applicant's disclosure section 024 calls for "a fixed height h", "fixed value of h", and an "average value of h". The said section further calls for "*Error in the fixed h*", NOT -- average error value-- as claimed. Thus there is no support for the claimed "determining an average error value based on the elevation information associated with the plurality of grid points and the average height of the receiver".

This is new matter,

Applicant further argues the prior art Ptanski disclose the limitations in the claims. The examiner respectfully disagrees and notes that applicant is not addressing all sections cited by the examiner in the prior art. Applicant's argument that the prior art does not disclose an ellipsoid and the ellipsoid is not an error ellipse is not convincing. The examiner respectfully notes that applicant does not provide a definition of "error ellipse" as claimed. Applicant admits that the prior art, Ptasinski discloses an ellipsoid. The examiner notes that an ellipsoid is another term for an ellipse. To the extent that the applicant is arguing that the terms used in the claims must match the terms in the prior art, the examiner disagrees and notes that MPEP recognizes that the subject matter of the claims need not be described literally (i.e. using the same terms or in *haec verba*) in prior art in order for prior art to anticipate the claims. The ellipse disclosed by Ptanski

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is an “error ellipse” because it is a model of the earth and does not present the exact dimensions of the earth as presents inaccuracies in locating a pseudo satellite at the center of the earth.

The applicant argues that the prior art, Ptasinski does not disclose “a grid of grid of points” in figs. 1 and 2, pages 452 and 453. The examiner notes that although figs. 1 and 2 do not clearly show a grid of grid of points, Ptasinski (figs. 5-10) mentions a digital map, well known to show a grid of grid of points (since digital is made of grids). However, in the 103 rejection above the second prior, Hancock discloses a two dimensional polynomial surface fit over a grid of points (Figs. 1, 2; col. 4, lines 1-10; cols. 6, etc). The drawings speak for themselves.

Applicant further argues that the prior art does not disclose “points along the major axis and minor axis that correspond to the altitude error”. The examiner disagrees and notes that this particular limitation is not claimed. The limitation in the claims read “a horizontal error ellipse parameter in the altitude equation that form an error ellipse having a major axis and a minor axis that correspond to the altitude error”.

Applicant then argues that since Ptasinski fails to disclose "a grid of grid of points" Ptasinski does not disclose the limitation, “a horizontal error ellipse parameter in the altitude equation that form an error ellipse having a major axis and a minor axis that correspond to the altitude error;

a plurality of points along the major axis and the minor axis that form a grid of grid points”. The applicant further argues that Ptasinski discloses *a difference between spheres* with one having a center at the center of the earth. The examiner disagrees and notes that there are no *spheres* in the prior art as insisted by the applicant, *plural tense emphasized*. The prior art

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Ptasinski shows an ellipse to represent the shape of the earth (see fig. 1, page 452). When calculating a 3-D GPS position solution, the earth is assumed to be a *sphere, singularity emphasized*. Now to compute a GPS position on the surface of the earth, Ptasincki notices that an error will occur due to the earth not being a sphere and thus compares the difference between the points on the ellipsoid and the sphere to obtain an approximate error between the positions on the ellipse and positions on the sphere. Thus the points on the ellipse form an error ellipse since they are approximations compared to a spherical earth. Ptasincki uses the approximations in an altitude-aiding equation to compute an accurate 3-D GPS position (see pages 452-454). The error ellipse shown in fig. 1 has a major axis and a minor axis. As already indicated, the error when the sphere is compared with the ellipse results in an altitude error. Therefore, fig. 1 shows a plurality of points along the major axis and the minor axis. Ptasincki shows latitudes and longitudes, thus it can be assumed that the points on the longitudes and latitudes form “a grid of grid points”. However, “a grid of grid points” is clearly shown in Hancock (fig. 1, cols. 4 and 6). Thus the prior art anticipate the claims.

Applicant failed to address Hancock as disclosing “a grid of grid points”.

Applicant further argues that the prior art does not disclose fitting a two-dimensional polynomial to a horizontal error ellipse. The examiner disagrees and notes that Ptasincki disclose a polynomial (the sphere of pages 452, 453) fitted over an error ellipse (figs. 1& 2) to obtain an error in position calculation in an altitude aiding equation (see pages 452-454). The error ellipse has horizontal and vertical dimensions, thus Ptasincki disclose a horizontal error ellipse.

Thus the prior art anticipate the claims.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Communication

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONNIE MANCHO whose telephone number is (571)272-6984. The examiner can normally be reached on Mon-Thurs: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tran Khoi can be reached on 571-272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Ronnie Mancho/
Examiner, Art Unit 3664

/KHOI TRAN/
Supervisory Patent Examiner, Art Unit 3664